

U.S. Patent Application No. 10/621,096
Amendment dated October 26, 2005
Reply to Office Action of July 26, 2005

REMARKS/ARGUMENTS

Reconsideration and continued examination of the above-identified application are respectfully requested. In this amendment, claim 1 is amended to include the limitations of claims 9 and 10, and claim 8 is amended as an independent claim including the limitations of claims 1 and 11. Claim 16 is amended as an independent claim including the limitations of claim 1, and claims 16, 17, and 18 are combined as a single claim. Claim 19 is amended to include the limitations of claim 20. Accordingly, full support for the amendment exists in the original claims and no questions of new matter are raised by this amendment. Entry of this amendment is respectfully requested.

Rejection of claims 1, 2, 4 - 6, 19 - 21, 23 and 24 under 35 U.S.C. §102(e) over Holcomb et al.

At page 2 of the Office Action, claims 1, 2, 4 - 6, 19 - 21, 23, and 24 were rejected under 35 U.S.C. §102(e) over Holcomb et al. (U.S. Patent Published Application No. 2002/0134675). The Examiner alleged that Holcomb et al. discloses a monolithic sputtering target assembly wherein the metal is tantalum, cobalt, or titanium. The Examiner further alleged that because the target is a monolithic target, it is inherent that the backing plate portion and the target are of the same metal. For the following reasons, this rejection is respectfully traversed.

Independent claim 1 relates to a monolithic sputtering target assembly that comprises a one piece assembly made from the same metal and comprising a sputtering target blank portion and a backing plate portion. Claim 1 is amended to include the limitations of claims 9 and 10. Since the Examiner has found that the cited art, including Holcomb et al., does not teach or suggest the limitations of claim 10 and that claim 10 would be allowable if rewritten as an

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independent claim, amended claim 1 is therefore now allowable. Therefore the rejection is overcome with respect to claims 1, 2, and 4 - 6.

Independent claim 19 relates to a sputtering target assembly that includes a backing plate and a sputtering target blank wherein the backing plate comprises a valve metal, cobalt, titanium or alloys thereof, and the sputtering target blank comprises a metal. Holcomb et al., on the other hand, describes a hollow cathode sputter target assembly that includes an outer shell having a cylindrical side wall and a base, and a sputtering insert that fits into the shell. Holcomb et al. does not teach or suggest any sputtering target assembly that has a sputtering target blank portion and a backing plate portion or that comprises a sputtering target blank and a backing plate. It is respectfully submitted that a hollow cathode sputter target assemblies are considered to be a different field from target assemblies having a sputter target blank and a backing plate. Specifically, the outer shell of the hollow cathode assembly of Holcomb et al. does not constitute a backing plate as that term is understood in the art of sputtering targets. Moreover, although Holcomb et al. in Figure 6 depicts a planar sputter material bonded to a planar shell blank, the blank assembly is merely a starting configuration for forming the blank assembly into a pot-shaped configuration as described in paragraph [0050] of Holcomb et al. Therefore, the shell blank in Fig. 6 of Holcomb et al. clearly does not constitute a backing plate as that term is understood in the art of sputtering targets. Accordingly, Holcomb et al. does not teach or suggest all of the limitations of independent claim 19 or of dependent claims 20 - 21 and 23 - 24. Therefore, this rejection should be withdrawn.

Rejection of claims 1, 5, 8, 12, 19, 20 and 23 under 35 U.S.C. §102(e) over Segal et al.

At page 3 of the Office Action, claims 1, 5, 8, 12, 19, 20 and 23 were rejected under 35

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U.S.C. §102(e) over Segal et al. (U.S. Patent No. 6,878,250). The Examiner alleged that Segal et al. discloses a monolithic sputtering target made of pure aluminum or titanium in which the backing plate portion has a flange. For the following reasons, this rejection is respectfully traversed.

As noted above, independent claim 1 is amended to include the limitations of claims 9 and 10, and claim 8 is amended as an independent claim including the limitations of claims 1 and 11. The Examiner has indicated that claims 10 and 11 are allowable over the applied art, including Segal et al.; therefore, amended claims 1 and 8 are now allowable, as well as dependent claims 5 and 12.

With respect to the Examiner's argument that "pure aluminum" must mean a purity greater than 99.5%, the applicants respectfully disagree. All metals have impurities and, clearly, patents in the past have characterized pure metal to have purities that would be greater than .5%. Thus, the Examiner's assumption is merely an assumption without any foundation in Segal et al.

Regarding claim 19, Segal et al. relates only to monolithic sputtering targets and does not teach or suggest any sputtering target assembly comprising a backing plate and a sputtering target blank. Accordingly, Segal et al. does not teach or suggest all of the limitations of independent claim 19 or of dependent claim 23. Therefore, this rejection should be withdrawn.

Rejection of claims 1 - 3, 5, 6, 8, and 19 - 23 under 35 U.S.C. §102(e) over Kim

Also at page 3 of the Office Action, claims 1 - 3, 5, 6, 8 and 19 - 23 were rejected under 35 U.S.C. §102(e) over Kim (U.S. Patent Published Application No. 2004/0089543). The Examiner alleged that Kim discloses a monolithic sputtering target assembly wherein the backing plate has a flange portion and wherein the target is made from tantalum, niobium or titanium. For

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the following reasons, this rejection is respectfully traversed.

As noted above, independent claim 1 is amended to include the limitations of claims 9 and 10, and claim 8 is amended as an independent claim including the limitations of claims 1 and 11. The Examiner has indicated that claims 10 and 11 are allowable over the cited art, including Kim; therefore, amended claims 1 and 8 are now allowable, as well as dependent claims 2, 3, 5, and 6.

Regarding claim 19, in describing target/backing plate constructions, Kim does not specifically teach or suggest a sputtering target assembly wherein the sputtering target and the backing plate are made from the same metal. In fact, at paragraph [0052], Kim recommends that the backing plate be formed of a material that is cheaper than the target, more easy to fabricate than the target or having other desired properties not possessed by the target. Thus, Kim teaches away from the invention of claim 19. Accordingly, Kim does not teach or suggest all of the limitations of independent claim 19 or of dependent claims 21 - 23. Therefore, this rejection should be withdrawn.

Rejection of claims 1, 5, 8, 9 and 13 - 15 under 35 U.S.C. §102(e) over Turner et al.

Also at page 3 of the Office Action, claims 1, 5, 8, 9 and 13 - 15 were rejected under 35 U.S.C. §102(e) over Turner et al. (U.S. Patent Published Application No. 2004/0119131). The Examiner alleged that Turner discloses a monolithic sputtering target comprising titanium with an average grain size of 5 microns and wherein the backing plate portion has a flange. For the following reasons, this rejection is respectfully traversed.

As noted above, independent claim 1 is amended to include the limitations of claims 9 and 10, and claim 8 is amended as an independent claim including the limitations of claims 1 and

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11. The Examiner has indicated that claims 10 and 11 are allowable over the cited art, including Turner et al. Therefore, amended claims 1 and 8 are now allowable, as well as dependent claims 5 and 13 - 15. Therefore, this rejection should be withdrawn.

Rejection of claims 25 - 28, 32 and 34 - 36 under 35 U.S.C. §103(a) over Aimone et al. in view of Holcomb et al.

At page 4 of the Office Action, claims 25 - 28, 32 and 34 - 36 were rejected under 35 U.S.C. §103(a) over Aimone et al. (U.S. Patent Published Application No. 2002/0112955) in view of Holcomb et al. The Examiner alleged that Aimone et al. discloses a method of recycling a refractory metal target. The Examiner acknowledges that Aimone et al. does not disclose the specific target to be a monolithic target, but that the method can be applied to any general metal target. The Examiner took the position that it would have been obvious to modify the invention of Aimone et al. to recycle the tantalum target of Holcomb et al. because of the desire to save money and materials and not have to create a brand new sputtering target. For the following reasons, this rejection is respectfully traversed.

As noted above, independent claim 1 is amended to include the limitations of claims 9 and 10. The Examiner has indicated that claim 10 is allowable over the cited references, including Holcomb et al; therefore, amended claim 1 is allowable. The Examiner has also acknowledged that Aimone et al. does not contain any specific teachings regarding the sputtering target as defined in amended claim 1. Consequently, the combination of Aimone et al. and Holcomb et al. does not teach or suggest all of the elements of claims 25 - 28 and these claims are therefore allowable over Aimone et al. and Holcomb et al.

Regarding claims 32 and 34 - 36, these claims depend from independent claim 19. As

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discussed above, the invention of claim 19 is not taught or suggested by Holcomb et al. Since Aimone et al. does not contain any specific teachings regarding the sputtering target as defined in amended claim 19, the combination of Aimone et al. and Holcomb et al. does not teach or suggest all of the elements of claims 32, 34, and 36 and these claims are therefore allowable over Aimone et al. and Holcomb et al.

Therefore, this rejection should be withdrawn.

Rejection of claims 25 - 28, 32 and 34 - 36 under 35 U.S.C. §103(a) over Aimone et al. in view of Segal et al.

At page 5 of the Office Action, claims 25 - 28, 32 and 34 - 36 were rejected under 35 U.S.C. §103(a) over Aimone et al. in view of Segal et al. The Examiner took the position that it would have been obvious to modify the invention of Aimone et al. to recycle the tantalum target of Segal et al. because of the desire to save money and materials and not have to create a brand new sputtering target. For the following reasons, this rejection is respectfully traversed.

The above comments regarding the allowability of amended claim 1 over Segal et al. apply equally here. The Examiner has also acknowledged that Aimone et al. does not contain any specific teachings regarding the sputtering target as defined in amended claim 1. Consequently, the combination of Aimone et al. and Segal et al. does not teach or suggest all of the elements of claims 25 - 28 and these claims are therefore allowable over Aimone et al. and Segal et al.

Regarding claims 32 and 34 - 36, these claims depend from independent claim 19. The above comments regarding the allowability of amended claim 19 over Segal et al. apply equally here. Since Aimone et al. does not contain a specific teaching regarding the sputtering target as defined in amended claim 19, the combination of Aimone et al. and Segal et al. does not teach or

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suggest all of the elements of claims 32, 34, and 36 and these claims are therefore allowable over Aimone et al. and Segal et al.

Therefore, this rejection should be withdrawn.

Rejection of claims 25 - 28, 32 and 34 - 36 under 35 U.S.C. §103(a) over Aimone et al. in view of Kim

At page 6 of the Office Action, claims 25 - 28, 32, and 34 - 36 were rejected under 35 U.S.C. §103(a) over Aimone et al. in view of Kim. The Examiner took the position that it would have been obvious to modify the invention of Aimone et al. to recycle the tantalum target of Kim because of the desire to save money and materials and not have to create a brand new sputtering target. For the following reasons, this rejection is respectfully traversed.

The above comments regarding the allowability of amended claim 1 over Kim apply equally here. The Examiner has also acknowledged that Aimone et al. does not contain any specific teachings regarding the sputtering target as defined in amended claim 1. Consequently, the combination of Aimone et al. and Kim does not teach or suggest all of the elements of claims 25 - 28 and these claims are therefore allowable over Aimone et al. and Kim.

Regarding claims 32 and 34 - 36, these claims depend from independent claim 19. The above comments regarding the allowability of amended claim 19 over Kim apply equally here. Since Aimone et al. does not contain a specific teaching regarding the sputtering target as defined in amended claim 19, the combination of Aimone et al. and Kim does not teach or suggest all of the elements of claims 32, 34, and 36 and these claims are therefore allowable over Aimone et al. and Kim.

Therefore, this rejection should be withdrawn.

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Rejection of claims 25 - 28, 32 and 34 - 36 under 35 U.S.C. §103(a) over Aimone et al. in view of Turner

At page 6 of the Office Action, claims 25 - 28, 32, and 34 - 36 were rejected under 35 U.S.C. §103(a) over Aimone et al. in view of Turner. The Examiner took the position that it would have been obvious to modify the invention of Aimone et al. to recycle the tantalum target of Turner because of the desire to save money and materials and not have to create a brand new sputtering target.

The above comments regarding the allowability of amended claim 1 over Turner apply equally here. The Examiner has also acknowledged that Aimone et al. does not contain any specific teachings regarding the sputtering target as defined in amended claim 1. Consequently, the combination of Aimone et al. and Turner does not teach or suggest all of the elements of claims 25 - 28 and these claims are therefore allowable over Aimone et al. and Turner.

Regarding claims 32 and 34 - 36, these claims depend from independent claim 19. The Examiner did not reject claim 19 over Turner, nor did the Examiner make any comment whatsoever regarding any relevance of Turner to independent claim 19. Moreover, it is respectfully submitted that Turner does not teach or suggest a sputtering target assembly wherein the sputtering target and the backing plate are made from the same metal, and therefore, claim 19 is patentable over Turner. Since Aimone et al. does not contain a specific teaching regarding the sputtering target as defined in amended claim 19, the combination of Aimone et al. and Turner does not teach or suggest all of the elements of claims 32, 34, and 36 and these claims are therefore allowable over Aimone et al. and Turner.

Therefore, this rejection should be withdrawn.

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Examiner's indication of allowable subject matter

Also at page 6 of the Office Action, the Examiner indicated that claims 10, 11, 16 - 18 and 39 would be allowable if rewritten in independent form. As noted above, claims 1, 8 and 16 are amended as independent claims containing subject matter that the Examiner has indicated is allowable. The Examiner further indicated that claims 37, 38 and 40 - 43 are allowed. While the applicants appreciate that the Examiner has found the subject matter of these claims allowable, the applicants believe that all of the claims are allowable over the references cited in the Office Action for the reasons discussed herein.

CONCLUSION

In view of the foregoing remarks, the applicant respectfully requests the reconsideration of this application and the timely allowance of the pending claims.

If there are any fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. §1.136 not accounted for above, such extension is requested and should also be charged to our Deposit Account.

Respectfully submitted,



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